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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/763,514

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Susan G. Yan

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7251

7590

11/01/2006

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EXAMINER

LEWIS, BEN

ART UNIT

PAPER NUMBER

1745

DATE MAILED: 11/01/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/763,514

Applicant(s)

YAN ET AL.

Examiner

Ben Lewis

Art Unit

1745

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 15-18 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 15-18 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. ____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- ☐ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☒ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date ____.
- ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____.
- ☐ Notice of Informal Patent Application
- ☐ Other: ____.

Detailed Action

1. The Applicant's amendment filed on January 23rd, 2006 was received. Claims 15-17 were amended. Claims 1-14 and 19 were cancelled.
2. The text of those sections of Title 35, U.S.C. code not included in this action can be found in the prior Office Action (issued on October 17th, 2005).

Claim Rejections - 35 USC § 112

3. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

4. Claims 15-18 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. The diffusion media of the instant invention is not bonded to the membrane prior to operation of the fuel cell as stated in claim 15. Additionally, applicant states in claim 15 "operating the fuel cell to cause the diffusion media layers to form to the membrane". However, it is the Examiner's position that a fuel cell with components such as the diffusion media and membrane not bonded would be inoperable.

Claim Rejections - 35 USC § 103

5. Claims 15-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yen et al. (US Patent No. 6,444,341) and further in view of Fan et al. (U.S. Patent No. 6,893,763 B2).

Yen et al. disclose a method of making a membrane electrode assembly comprising providing a diffusion media layer (carbon paper electrode support), providing a microporous layer (sintered catalyst coat) as part of the diffusion media layer, depositing a catalyst layer on the diffusion media layer, spraying an ionomer layer on the catalyst layer, and positioning the diffusion media layer adjacent the membrane so that the ionomer layer faces the membrane (col. 7, lines 1-26). Yen et al does not specifically teach operating the fuel cell to cause the diffusion media layers to form to the membrane so that the diffusion media layers do not need to be bonded to the membrane prior to operating the fuel cell. However, Fan et al discloses a composite polymer electrolyte membrane for polymer electrolyte membrane fuel cells wherein catalyst ink containing Pt--C catalyst from Johnson-Matthey with the ionomer of the doping material was prepared and directly applied to a membrane. Two gas diffusion layers with two layers of sub-gaskets were placed on the catalyst layers. Because the catalyst ink is directly deposited on the membrane, no hot press step is necessary to

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fabricate the membrane electrode assembly. Also shown are the catalyst layers 14, 15 and the sub-gaskets 16, 17. This MEA was assembled into a 60°C single cell with two graphite bipolar plates for a test (MEA) (Col 5 lines 1-15).

As seen in Figure 2, the anode catalyst layer is about the same size as the anode diffusion media layer and the cathode catalyst layer is about the same size as the cathode diffusion media layer. The membrane is made of NAFION which is a perfluorinated membrane (col. 1, lines 20-40).

Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the no hot pressing step of Fan et al. into the MEA fabrication of Yen et al because Fan et al teach that because the catalyst ink is directly deposited on the membrane, no hot press step is necessary to fabricate the membrane electrode assembly (Col 5 lines 1-15).

Response to Arguments

6. Applicant's arguments filed on January 23rd, 2006 have been fully considered but they are not persuasive.

Applicant's principle arguments are

(a) Yen et al. does not appear to teach or suggest depositing a catalyst layer on a diffusion medial layer, spraying an ionomer layer on the catalyst layer and then forming

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the diffusion media layer including the catalyst to a membrane through the operation of the fuel cell.

(b) Applicant submits that Fan et al. does not provide the teaching missing from Yen et al. to make Applicant's independent claim 15 obvious.

In response to Applicant's arguments, please consider the following comments.

(a) Yen et al. disclose a method of making a membrane electrode assembly comprising providing a diffusion media layer (carbon paper electrode support), providing a microporous layer (sintered catalyst coat) as part of the diffusion media layer, depositing a catalyst layer on the diffusion media layer, spraying an ionomer layer on the catalyst layer, and positioning the diffusion media layer adjacent the membrane so that the ionomer layer faces the membrane (col. 7, lines 1-26).

With respect to operating the fuel cell to form the diffusion media layer including the catalyst to a membrane through the operation of the fuel cell: It Examiner's position that a fuel cell with components such as the diffusion media and membrane not bonded would be inoperable.

(b) Fan et al. does not teach bonding the diffusion media layers to the membrane because this would not be required as the catalyst is already on the membrane, and not on the diffusion media layer.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ben Lewis whose telephone number is 571-272-6481. The examiner can normally be reached on 8:30am - 5:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Susy Tsang-Foster can be reached on 571-272-1293. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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Ben Lewis


PATRICK JOSEPH RYAN
SUPERVISORY PATENT EXAMINER

Patent Examiner
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